# Goals and Objectives Results

BALLARD TO DOWNTOWN SEATTLE TRANSIT EXPANSION STUDY

The participants of the March Open House and the online mapping tool generally supported all of the project's goals and objectives and ranked the majority as "important" or "very important." Three goals and objectives, highlighted below, were weighted "very important" more heavily than the others.

Goals and Objectives Ranking										
Goal/Objective	Not Important	Somewhat Important	Important	Very Important						
Increase transit ridership by providing services that are reliable, frequent and efficient	0%	2%	12%	86%						
Improve <b>mobility</b> options for residents and businesses between Ballard and Downtown Seattle	1%	6%	9%	84%						
Support sustainable urban growth	2%	9%	21%	68%						
Improve connection to the regional transit system	3%	12%	22%	63%						
Efficient use of public funding	2%	15%	29%	54%						
Preserve and enhance the <b>environment</b>	1%	16%	31%	52%						
Provide equitable access for residents and businesses	3%	16%	31%	50%						





# Routes Suggested Through Public Input

BALLARD TO DOWNTOWN SEATTLE TRANSIT EXPANSION STUDY

Nearly 150 people attended the open house on March 12, 2013, and nearly 270 people participated in an online interactive mapping tool. All the routes proposed by members of the public are shown below.



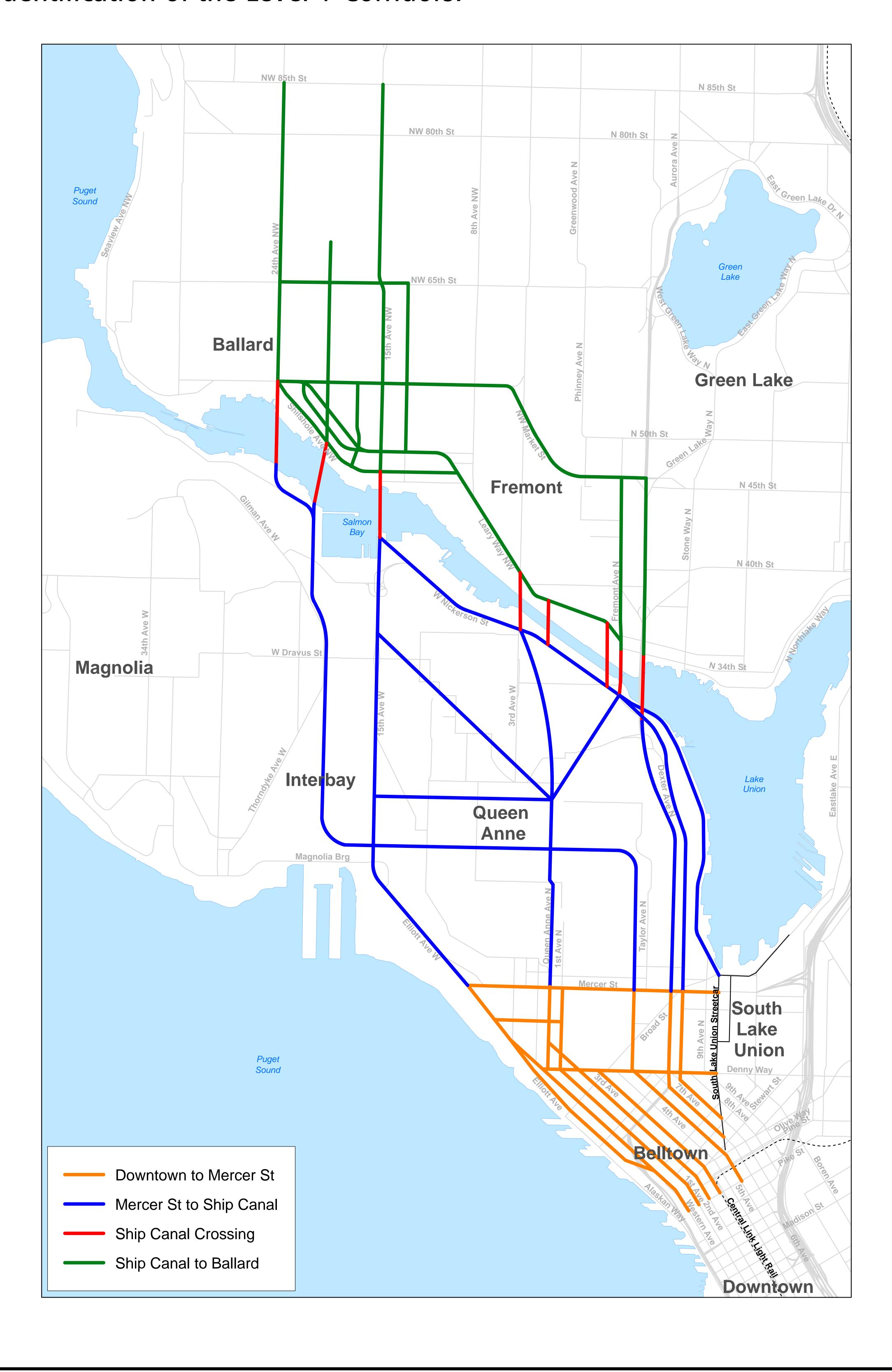




# Initial Corridor Options

BALLARD TO DOWNTOWN SEATTLE TRANSIT EXPANSION STUDY

The options suggested by participants of the March Open House and the online mapping tool were screened based on prioritization of the project's goals and objectives and to eliminate routes located outside of the project study area. The remaining options were then organized into four geographic segments for the purpose of further screening and identification of the Level 1 Corridors.





# Screening Process and Criteria

BALLARD TO DOWNTOWN SEATTLE TRANSIT EXPANSION STUDY

# Level 1 Evaluation

Initial broad range of options gathered from agency outreach and public feedback received during the March 12, 2013 Open House and through the online mapping tool.

### **Initial screening:**

meets goals and objectives?

Options within the project area selected to meet technical constraints including connections to key transit markets, impacts to traffic and engineering feasibility.

Eight corridors identified for Level 1 evaluation.

Level 1 evaluation



(we are here)

Corridors further refined and advanced for Level 2 detailed evaluation based on public input and technical constraints including ridership forecasts and quantitative technical analysis.

Level 2 evaluation

**Evaluation results included** in the Final Report.

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# Factors to Keep in Mind

BALLARD TO DOWNTOWN SEATTLE TRANSIT EXPANSION STUDY

### Downtown Connection:

- Planned light rail extensions to Lynnwood and the East Side will increase train traffic in the Downtown Seattle Transit Tunnel (DSTT), leaving no room in the tunnel for a Ballard rail line to safely operate. If the Ballard rail line used a separate parallel tunnel to enter or exit Downtown Seattle, underground walkways could connect passengers to the DSTT.
- Surface street options are also being considered and will be coordinated with the Center City Connector Transit Study.

## **Ship Canal Crossing:**

- A 70 ft movable bridge would reduce the number of openings required for passing ship traffic compared to the existing bridges.
- A fixed bridge will likely require 140 ft clearance above the water level and would not open for ship traffic.
- A tunnel (25 to 45 ft below the waterway) would not interfere with ship traffic.
- The existing Fremont Bridge is 31 ft above the water level and opens 15 times a day (on average).
- The existing Ballard Bridge is 44 ft above the water level and opens 12 times a day (on average).

### Mode:

- Rapid Streetcar operates on surface streets with an extensive use of exclusive lanes, uses high levels of priority treatments to gain advantage over traffic and has wide spacing between stops.
- Light Rail operates principally in its own right-of-way on surface streets, in tunnels or on elevated tracks and provides fast connections with limited stops.









### Corridor 1: Interbay West/New Bridge BALLARD TO DOWNTOWN SEATTLE TRANSIT EXPANSION STUDY NW 85th St N 85th St FEATURES AND SERVICE NW 80th St Puget Cost: Sound Market St to Downtown Seattle: \$750 - \$1,000 M 85th St to Market St: N/A NW 65th St **Peak Period Travel Time:** Market St to Downtown Seattle: 14-19 min Ballard 85th St to Market St: N/A NW Market St **Ship Canal Crossing:** 140' Fixed Bridge Ship Canal Crossing: 140' Fixed Bridge Fremont N 45th \$t Salmon N 40th St W Dravus St Magnolia Lake Union Interbay Queen Anne Magnolia Brg Travel Travel 충혈 Sidewalk Existing Building Mercer St South Lake Union Existing Building Belltown **Station Vicinity** At-grade: Exclusive Lane Elevated Downtown Corridor 1 0.25 0.75 NORTH





### Corridor 2: Interbay West/Ship Canal Tunnel BALLARD TO DOWNTOWN SEATTLE TRANSIT EXPANSION STUDY NW 85th St N 85th St FEATURES AND SERVICE NW 80th St Puget Cost: Sound Market St to Downtown Seattle: \$2,500 - \$3,000 M 85th St to Market St: N/A NW 65th St **Peak Period Travel Time:** Market St to Downtown Seattle: 12-17 min Ballard 85th St to Market St: N/A **Ship Canal Crossing:** Tunnel Fremont Ship Canal Crossing: Tunnel N 45th \$t Salmon Bay N 40th St W Dravus St Magnolia Eastlake Ave Lake Union Interbay Queen Anne Magnolia Brg Anne Ave N South Lake Union Puget Sound Belltown **Station Vicinity** Elevated Tunnel Downtown Corridor 2 Miles





0.25

NORTH

0.5

0.75

### Corridor 3: 15th Avenue/Elevated BALLARD TO DOWNTOWN SEATTLE TRANSIT EXPANSION STUDY NW 85th St N 85th St FEATURES AND SERVICE NW 80th St Puget Cost: Sound Market St to Downtown Seattle: \$1,500 - \$2,000 M 85th St to Market St: N/A NW 65th St **Peak Period Travel Time:** Market St to Downtown Seattle: 11-16 min **Ballard** 85th St to Market St: N/A **Ship Canal Crossing:** 140' Fixed Bridge Fremont N 45th \$t Ship Canal Crossing: 140' Fixed Bridge Salmon N 40th St W Dravus St Magnolia Eastlake Ave E Interbay Lake Union Queen Anne Magnolia Brg South Lake Union Denny Way Puget Sound Belltown **Station Vicinity** Elevated Tunnel Downtown Corridor 3 Miles 0.5 0.75 0.25 NORTH





### Corridor 4: 15th Avenue/At-grade BALLARD TO DOWNTOWN SEATTLE TRANSIT EXPANSION STUDY NW 85th St N 85th St FEATURES AND SERVICE NW 80th St Puget Cost: Sound Market St to Downtown Seattle: \$500 - \$750 M 85th St to Market St: Approx \$100 M NW 65th St **Peak Period Travel Time:** Market St to Downtown Seattle: 13-18 min Ballard 85th St to Market St: Approx 5 min NW Market St **Ship Canal Crossing:** 70' Movable Bridge Fremont N 45th \$t Ship Canal Crossing: 70' Movable Bridge Salmon \_ N 40th St W Dravus St Magnolia 호텔 Sidewalk Existing Building Interbay Lake Union Queen Anne Magnolia Brg Existing Building Existing Building Mercer St South Lake Union Belltown **Station Vicinity** At-grade: Exclusive Lane Elevated Downtown Corridor 4 0.25 0.75 NORTH





### Corridor 5: Queen Anne Tunnel BALLARD TO DOWNTOWN SEATTLE TRANSIT EXPANSION STUDY NW 85th St N 85th St FEATURES AND SERVICE NW 80th St Puget Cost: Sound Market St to Downtown Seattle: \$2,000 - \$2,500 M 85th St to Market St: N/A NW 65th St **Peak Period Travel Time:** Market St to Downtown Seattle: 15-20 min Ballard 85th St to Market St: N/A NW Market St **Ship Canal Crossing:** 70' Movable Bridge Fremont N 45th \$t Salmon N 40th St Ship Canal Crossing: Magnolia 70' Movable Bridge Eastlake Ave E Interbay Lake Union Dexter Ave N Queen Anne Magnolia Brg Mercer St Anne Ave N t Ave N South Lake Union Puget Sound **Station Vicinity** Belltown At-grade: Exclusive Lane Elevated Tunnel Downtown Corridor 5 Miles 0.25 0.75 NORTH





### Corridor 6: Westlake/Ship Canal Tunnel BALLARD TO DOWNTOWN SEATTLE TRANSIT EXPANSION STUDY NW 85th St N 85th St FEATURES AND SERVICE NW 80th St Puget Cost: Sound Market St to Downtown Seattle: \$1,000 - \$1,500 M 85th St to Market St: Approx \$100 M NW 65th St **Peak Period Travel Time:** Market St to Downtown Seattle: 14-19 min Ballard 85th St to Market St: Approx 6 min **NW Market St Ship Canal Crossing:** Tunnel Fremont N 45th \$t Salmon N 40th St Magnolia N 34th St Ship Canal Crossing: Tunnel Parking Eastlake Ave E Interbay Lake Union Queen Anne Magnolia Brg Mercer St South Lake Union Puget Sound Belltown **Station Vicinity** At-grade: Exclusive Lane Tunnel Downtown Corridor 6 Miles 0.25 0.75 NORTH





### Corridor 7: Dexter/Fremont Bridge BALLARD TO DOWNTOWN SEATTLE TRANSIT EXPANSION STUDY NW 85th St N 85th St FEATURES AND SERVICE NW 80th St Puget Cost: Sound Market St to Downtown Seattle: <\$500 M 85th St to Market St: Approx \$100 M NW 65th St **Peak Period Travel Time:** Market St to Downtown Seattle: 18-25 min **Ballard** 85th St to Market St: Approx 5 min NW Market St **Ship Canal Crossing: Existing Fremont Bridge** Fremont N 45th \$t Salmon Bay N 40th St Magnolia Ship Canal Crossing: Existing Fremont Bridge Eastlake Ave Interbay Lake Union Queen Anne Magnolia Brg Streetcar/ Streetcar/ Bike Parking Sidewalk Lane Lane Lane Existing Building Existing Building South Lake Union Puget Sound Belltown **Station Vicinity** •••• At-grade: Shared Lane At-grade: Exclusive Lane Downtown Corridor 7 Miles 0.25 0.75 NORTH





### Corridor 8: Westlake/New Bridge BALLARD TO DOWNTOWN SEATTLE TRANSIT EXPANSION STUDY NW 85th St N 85th St FEATURES AND SERVICE NW 80th St Puget Cost: Sound Market St to Downtown Seattle: <\$500 M 85th St to Market St: Approx \$100 M NW 65th St **Peak Period Travel Time:** Market St to Downtown Seattle: 17-24 min Ballard 85th St to Market St: Approx 6 min **NW Market St Ship Canal Crossing:** 70' Movable Bridge Fremont N 45th \$t N 40th St Ship Canal Crossing: 70' Movable Bridge Magnolia N 34th St Travel Parking 중설 Sidewalk Streetcar Eastlake Ave E Interbay Lake Union Queen Anne Magnolia Brg Existing Green Slope Streetcar Parking South Union Denny Way Puget Sound Belltown **Station Vicinity** At-grade: Shared Lane At-grade: Exclusive Lane Elevated Downtown Corridor 8 Miles 0.25 0.75 NORTH





# Level 1 Analysis and Evaluation Matrix\*

### BALLARD TO DOWNTOWN SEATTLE TRANSIT EXPANSION STUDY

	1 Interbay West/ New Bridge	Interbay West/ Ship Canal Tunnel	3 15 <sup>th</sup> Avenue/ Elevated	4 15 <sup>th</sup> Avenue/ At-grade	Queen Anne Tunnel	6 Westlake/Ship Canal Tunnel	7 Dexter/ Fremont Bridge	8 Westlake/ New Bridge				
► Goal: Increase transit ridership by providing services that are reliable, frequent, and efficient												
Service to key transit travel markets	Ballard, Uptown, Belltown, Downtown	Ballard, Uptown, Belltown, Downtown	Ballard, Uptown, Belltown, Downtown	Ballard, Uptown, Belltown, Downtown	Ballard, Fremont, Upper QA, Uptown, Belltown, Downtown	Ballard, Fremont, SLU, Denny Triangle, Downtown	Ballard, Fremont, SLU, Denny Triangle, Downtown	Ballard, Fremont, SLU, Denny Triangle, Downtown				
Number of at-grade signalized intersections traversed	16	0	0	28	10	19	36	27				
Reliability of Ship Canal crossing	140' fixed bridge (no openings)	Tunnel (no openings)	140' fixed bridge (no openings)	70' movable bridge (reduced off-peak openings)	70' movable bridge (reduced off-peak openings)	Tunnel (no openings)	Fremont Bridge (off-peak openings)	70' movable bridge (reduced off-peak openings)				
Peak period travel time (min) (with no bridge openings)	14–19	12–17	11–16	13–18	15–20	14–19	18–25	17–24				
► Goal: Improve mobility options for residents and businesses between Ballard and Downtown Seattle												
Effects on traffic operations (general purpose traffic, freight mobility, local circulation and parking)	Moderately High Impacts	Low Impacts	Low Impacts	High Impacts	Moderate Impacts	Moderate Impacts	Moderately High Impacts	High Impacts				
Effects on multimodal mobility (pedestrians, bicycle, and transit)	Moderately High Impacts	Low Impacts	Low Impacts	High Impacts	Moderate Impacts	Moderately High Impacts	Moderate Impacts	Moderate Impacts				
► Goal: Support sustainable urban growth												
Opportunity for economic and transit-oriented development	Low	Moderately Low	Moderately Low	Moderately Low	Moderately High	High	High	Moderately High				
► Goal: Improve connection to the regional trans	sit system											
Ease of pedestrian connection to Westlake Link station	Moderately High	High	High	Moderately High	High	Moderately High	Moderately High	Moderately High				
Connectivity to local bus network	High	High	High	High	Moderate	Moderately Low	Moderately Low	Moderately Low				
► Goal: Make efficient use of public financial res	ources											
Conceptual cost etimate (2013 \$M)	\$750-\$1,000	\$2,500-\$3,000	\$1,500-\$2,000	\$500-\$750	\$2,000-\$2,500	\$1,000-\$1,500	<\$500	<\$500				
Conceptual operations and maintenance cost estimate	Low Cost	Low Cost	Low Cost	Moderate Cost	High Cost	High Cost	High Cost	Moderate Cost				
Construction challenges of major infrastructure elements	<ul><li>Bridge over BNSF</li><li>140' bridge over Salmon Bay</li></ul>	<ul> <li>Very long tunnel from CBD to SW Queen Anne via Seattle Center</li> <li>Bridge over BNSF</li> <li>Tunnel under Salmon Bay</li> </ul>	<ul> <li>Long tunnel from CBD to SW Queen Anne</li> <li>Elevated 15th Ave guideway</li> <li>140' bridge over Ship Canal</li> </ul>	•70' movable bridge	<ul> <li>Very long tunnel from CBD to Nickerson</li> <li>Deep tunnel station under QA</li> <li>70' movable bridge</li> </ul>	•Tunnel under Lake Union	•Use existing Fremont Bridge	•70' movable bridge				
Potential conflicts with major water, sewer, and power utilities	Moderate Conflicts	Moderately High Conflicts	Moderate Conflicts	Moderately High Conflicts	High Conflicts	Moderately High Conflicts	Moderately High Conflicts	Moderately High Conflicts				
Potential availability and ease of access to maintenance and storage facility	North Port: High	North Port: High	Interbay/15th: Moderate	Interbay/15th: Moderate	Leary: Low	Leary: Low	Leary: Low	Leary: Low				
► Goal: Preserve and enhance the environment												
Potential visual and natural environment impacts	Moderately High Impacts	Moderately Low Impacts	Moderately High Impacts	Low Impacts	Moderately Low Impacts	Low Impacts	Low Impacts	Moderately Low Impacts				
► Goal: Provide equitable access for residents and b	usinesses											
Number of census tracts served with medium and high concentrations of zero-car households	6	7	6	6	8	8	8	8				

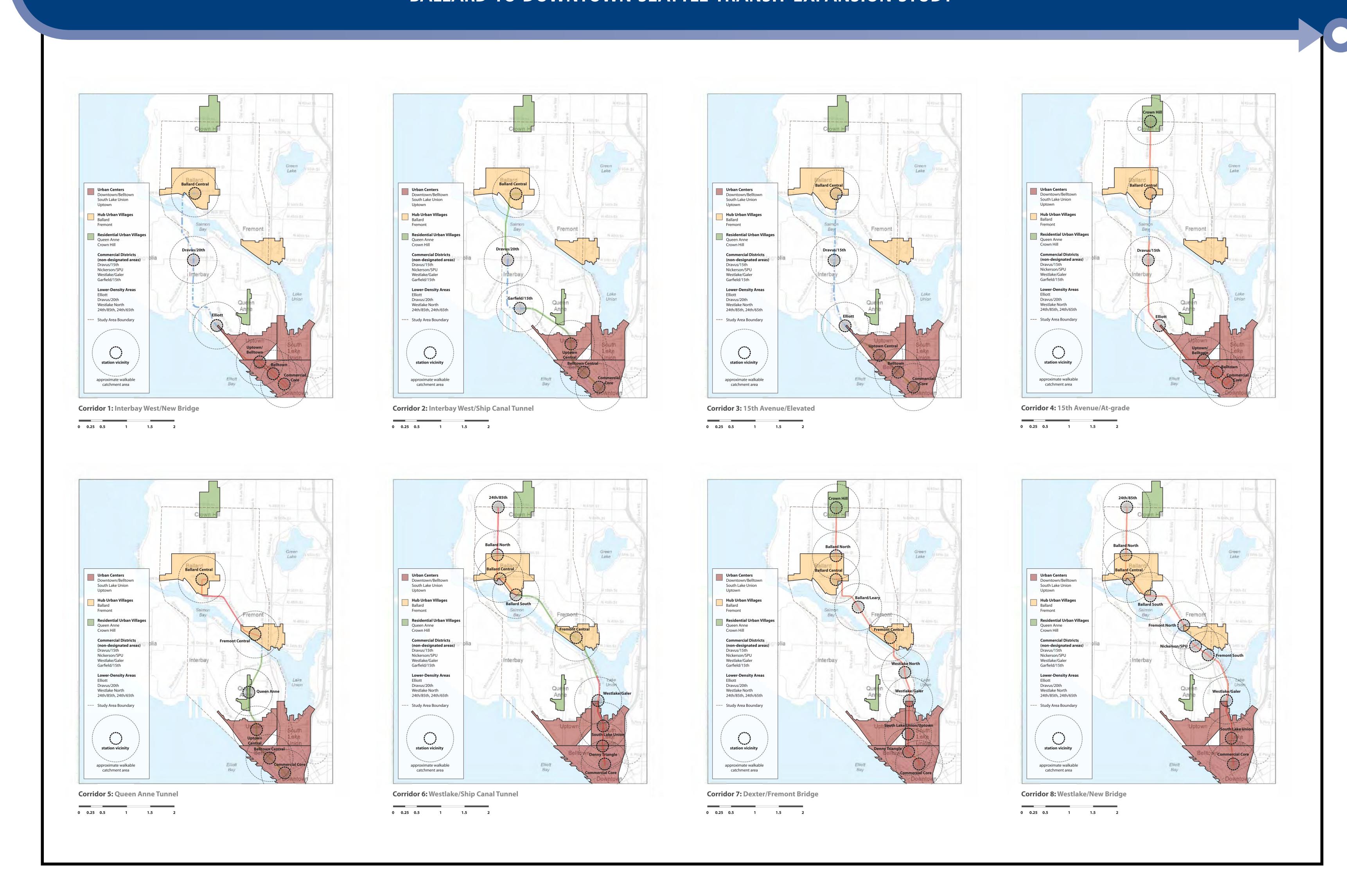
<sup>\*</sup>Analysis for Downtown Ballard (Market Street) to Downtown Seattle





# Opportunity for Economic and Transit-Oriented Development

BALLARD TO DOWNTOWN SEATTLE TRANSIT EXPANSION STUDY







# Study Timeline and Process

BALLARD TO DOWNTOWN SEATTLE TRANSIT EXPANSION STUDY

